Small Business Center

Enhancing university – firm collaboration through an open innovation platform

- A study on university – small firm collaboration based on experiences from the Plan C project

Heikki Rannikko, Miika Kajanus

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Enhancing university – firm collaboration through an open innovation platform

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Abstract: In this paper two research questions are explored by analysing empirical material from Savonia University of Applied Sciences' innovation platform. The primary question is: how does strong tie development between faculty and firm representatives differ in the context of applied science university from strong tie development in the context of research university? A secondary and more practical question concerns the extent to which an innovation platform was successful in bringing Savonia University of Applied Sciences closer to theoretically derived Open Innovation System (OIS) operation model. Concerning the first research question our analysis suggests that strong-tie development in the context of university of applied science is different from that of research university because of missing common history between firm population and university staff. Concerning the second question our analysis suggests that the creation of an open innovation platform (Plan C) has helped Savonia University of Applied Sciences to increase the number of ties between university staff and firm representatives as well as the tie strength. By so doing the project has supported the theoretically driven Open Innovation System operation mode.

Keywords: Open innovation, creative entrepreneurs, continuous development, university – firm collaboration

1 Introduction

University – firm collaboration is an area of interest for universities, firms and local governments. Different stakeholders' interest in the co-operation, however, differ and therefore there is an ever continuing discussion on how to best organise this co-operation. Universities' priority is in enhancing their students' knowledge and skills and in research universities, of course, to make scientific achievements. Firms' needs concentrate around receiving skilled workforce and receiving research and development aid for their diverse projects. Local governments' position is in the middle: both to guarantee the development of an area through viable firm population and to ensure the local university's success in its main duty of educating young people.

Societal (local government) viewpoint turns our attention towards universities' knowledge spill-overs that have been seen as the key to foster regional development. According to this view firms have an incentive to locate near university as the proximity to universities reduces the cost of accessing and absorbing knowledge spill-overs (Audretsch et. al., 2005). Consequently, the process through which knowledge is transferred from academia to private sectors has received a plenty of attention (Casper, 2013). Recent studies have turned around this traditional thinking. Instead of push factors, this research has emphasized pull factors i.e. those factors that regulate how knowledge is absorbed by private sector from the academia. An important finding from this research is that tie strength between private sector actors and university researchers helps in knowledge transfer and commercialisation (Casper, 2013).

While earlier and recent studies have significantly helped us to understand the nature of the knowledge transfer process in the context of research university and high-technology firms we still lack understanding about the knowledge transfer process between universities of applied sciences and 'not-so-high-technology-firms'. There are good reasons to believe that indeed the relationship between these parties is different than what is experienced between research university and industry researchers in established high-technology firms. The nature of innovation in small firms is for example informal and tied to everyday operation of a firm which makes development activity less visible (Kirner et al., 2009). Furthermore, small firms are likely not to have the resources, capabilities and network connections to make up the innovation capacity (Forsman, 2011). These factors mean that establishing strong ties between local universities and firms is not as straight forward as with science universities and high-technology firms. By addressing this particular observation in this paper, we wish to shed light on the knowledge transfer process and local development from a novel viewpoint.

The approach adopted in this paper is empirical case study. As empirical material we use an applied science university's recent attempt to increase university – firm collaboration by establishing an innovation platform through which firm representatives and university development experts may fruitfully co-operate and thereby enhance small firms' development capabilities better than before. Among purposes of the project was to bring organisation closer to open innovation system (OIS) strategy according to which collaborative learning with firms locating in proximity of the university is in focus

(Figure 1). We frame our analysis around four hypotheses concerning each stakeholder's relationship with innovation platform. By studying these hypotheses we wish to shed light on the principal research question: how does strong tie development between faculty and firm representatives differ in the context of applied sciences university from strong tie development in the context of a research university. Besides answering this question, an estimate about the success of the Plan C project is provided.

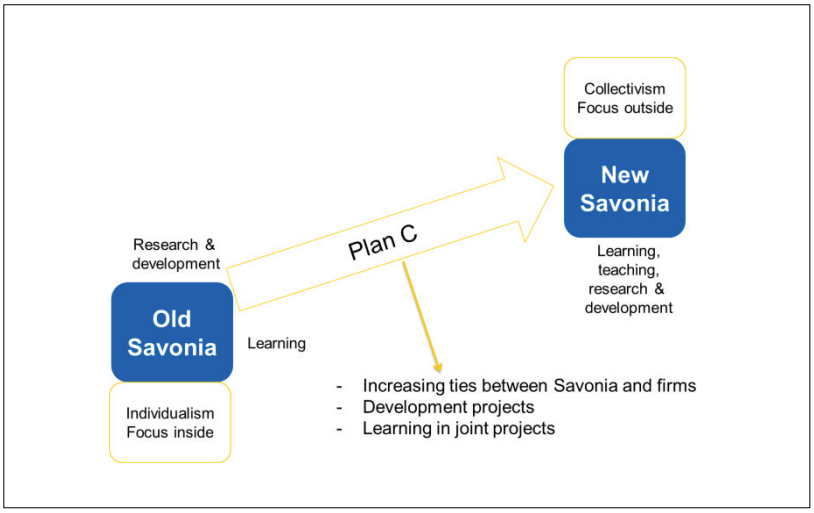

Figure 1 Change from old Savonia to new Savonia (OIS strategy)

In what follows first the theoretical framework is presented. This is followed by presentation of methodology and empirical material. Paper ends with the analysis section and discussion on results and limits of the study.

2 Theory

As outlined, this paper aims to increase understanding about strong tie development between faculty and firm representatives in the context of applied sciences university. For developing a particular framework and theoretical hypotheses we review relevant streams of research. First we look at literature on regional innovation systems and secondly literature on innovation activity in small firms. Thereafter a new applied sciences university operating model (Savonia OIS model) is presented. This model builds essentially on the idea of intense university-firm collaboration. Finally, we present the Plan C open innovation platform, a project that aimed to bring university closer to new operating mode and hypotheses on what it should had achieved to have been successful.

Regional Innovation Systems

The concept of regional technology spill-overs by university research is one of the most enduring theories within innovation studies (Casper, 2013). According to this view firms have an incentive to locate near university as the proximity to universities reduces the cost of accessing and absorbing knowledge spill-overs (Audretsch et. al., 2005). Traditionally, the efficiency of knowledge transfer process from academia to private sectors has been explained by internal factors such as research endowments, prestige, organisational practices and funding of the transfer process (Casper, 2013). Recent research has added to this literature by recognizing that personal contacts linking scientists with individuals in industry are important and that density of contacts, in turn, is essentially dependent on the quality of the regional economy (Casper, 2013). Formally, a conceptual framework in which regional spill-overs can be analysed is provided by the concept of regional innovation system (RIS).

The concept of RIS relates more generally to the concept of innovation system which is one of the main issues in contemporary innovation research is (Edquist, 2005). Currently, both narrow and broad approaches on innovation systems are applied. Narrowly seen most important in studying innovation systems is to understand from where innovations emerge whereas broadly viewed diffusion and the use of innovations are also important (Cantner et al., 2010). The concept of the regional innovation system has resulted from the recognition of regional differences in innovation. Specifically, it has been noticed that innovation is not equally distributed in space but that innovation seems to be a regionally bounded phenomenon (Cantner et al., 2010).

The core idea in the regional innovation system approach is to understand region as a network of actors that is build up by regional resources (Cantner et al., 2010). According to Carlsson et al. (2002) regional innovation system is made up of components, relationships and attributes. Components of regional innovation system consist of firms, research institutes and individual actors (physical units) or regulation, tradition and social norm (intangible units). The systemic nature occurs as components do not act in isolation but interact with each other. Thus, relationships among the system components constitute the very core of the system. Furthermore, the relationships across system components depend on the attributes (characteristics) of these components.

Interactions and knowledge flows are important between system components. Researchers have identified four mechanisms for (inter-organisation) knowledge flows. The first is informal interaction within entrepreneurs and other actors within the system. More formal modes of co-operation are strategic alliances and research collaboration among universities and industry as well as labour mobility and creation of spin-off firms (Ter Wal et al., 2011).

If we compare interaction and knowledge flows in the context of applied science university and in the context of research university it is easy to see that there are plenty of differences. First, informal interaction does not take place easily in applied science university context because there are no existing connections between applied science university staff and small firm representatives. Second, strategic alliances and research collaboration does not easily take place since small not-so-high-technology-firms are resource constraint and do not have the (innovation) capacity to carry out co-operation. Third, there is minimal labour mobility between small not-so-high-technology-firms and applied science university because firms' growth development is moderate and therefore new vacancies do not open-up in these firms. Finally, spin-off activity is in low level in applied science university sector when compared to research universities because in research universities ideas take more tangible form as IPRs that make university based new firm founding more visible.

The brief literature review on research on innovation systems shows that for the emergence and diffusion of innovation strong ties (personal contacts) are important. The most convincing evidence is from studies that analyse relationships between research university and high-technology firms. While traditionally push view has received support among researchers, more recently the pull view has also become popular. While both views place emphasis on the formation of relationships between system components, the push view emphasises the role of the research sector and the pull view stresses that also firm population must be ready to co-operate with researchers and absorb information and new ideas. A shortcoming in current research is that the empirical evidence is in the context of research university. In reality, universities of applied science are in many regional innovation systems equally important components of the system and they tend to operate on more practical level with smaller firms. Moreover, as demonstrated in previous paragraph, interaction and knowledge flows in this context are not as naturally established as in the research university context. Hence, in order to increase our understanding on the emergence, diffusion and use of innovations, this study focuses on applied university – small firm relationship.

Innovation activity in small firms

Entrepreneurial small and micro firms are important actors of regional economies. According to Audretcsh and Thurik (2004) there are three channels through which entrepreneurship may positively affect economic growth: increasing innovation and knowledge spill-overs, increasing competition, and increasing diversity in sectors and firms. Despite their important position, innovation in small and micro firms has received only scant attention while the majority of innovation studies have focused on innovation in large and medium-sized firms (Forsman, 2011). Some recent studies, however, can be found that discuss the special characteristics of small and micro firms regarding innovation capacity and innovation activity as well as sector specific differences in innovation activity. Common denominator of these studies is the finding that in majority

of the small and micro firms, innovation does not relate to linear, formally organised process, but to informal collaboration with existing partners and customers that leads to incremental improvements in operations.

In her recent study Forsman (2011) relates innovation capacity to internal resources, capabilities and networking. This framework provides a suitable setting for analysing the speciality of small and micro firm regarding innovation. First, in large established firms internal resources may well be understood as the level of investments in research and development activity, since dedicated staff and investments have been made to this and established processes exist to carry out innovation. In small and micro firms, however, it has been found that only around one third of firms write down a formal plan for innovation and only half of firms reserve a budget for innovation (de Jong, et al., 2006). Instead of being formally managed, empirical studies hint that innovation consists of informal activities such as experimentation, learning, evaluation and adaption of technologies (Santamaria et. al., 2009). Second, innovation capability, i.e. the ability to transform resources to innovations, may well be understood through the concept of absorptive capacity. This refers to an ability of a firm to recognise the value of new external knowledge, to assimilate it, and to apply it to commercial ends (Zahra et. al., 2002). Concerning micro and small firms, it has been found, that on average these firm have lower absorptive capacity than large or medium sized firms, making reciprocal cooperation with researchers and developers more difficult and thereby having negative effects on innovation. Third, networking is the role of firms in the regional innovation system.

In conclusion, innovation activity of small and micro firms seems to differ from that of large or medium sized established firms. On the premise of the above, it is likely indeed that strong tie development differs from that of science university researchers and high-technology firms. In sum, innovation activity corresponds to small scale continuous development that is informal, with few contacts to academia while more natural contacts to applied science university sector. In light of this, our question of how does strong tie development between faculty and firm representatives differ in the context of applied sciences university from strong tie development in the context of a research university seem relevant. This issue is studied in more detail in a framework of open innovation platform that was organised to bring Savonia University of Applied Sciences closer to open innovations system -operation model.

University open innovation space in Savonia University of Applied Sciences

During the past few years Savonia University of Applied Sciences has developed an operational Open Innovation Space (OIS) model. The theoretical background of OIS comes from socio-constructive pedagogy and applied research. In these domains knowhow and knowledge production is seen as context-driven, problem-focused and interdisciplinary (Gibbons et al., 1994., Rissanen & Vidgren 2013). The ultimate aim of the new strategy is to improve capabilities of Savonia such that the needs of regional business are met better than before (Kajanus et al., 2012). Consequently, it is expected that the tie-density as well as the tie strength are fostered between Savonia's employees and local entrepreneurs. Savonia was awarded with the Quality Assurance Certificate in 2009 by the Finnish Higher Education Evaluation Council for its efforts in this area.

Savonia is implementing and developing the OIS model in cooperating with working life, students and other faculties of the university. Teaching and learning applies approaches like Project Learning (PBL), Problem Based Learning (PBL) and Learning by Developing (LBD) (Jylhä-Vuorio, 2011). The new curriculum enables students to join integrated project teams at early point of their studies. Advanced students get more responsibility and the most experienced students take a role as project managers. Intense collaboration with working life is one of the key elements of the model. Students and teachers run about over thousand commissions and projects each year with good results. Many of them are international developing projects funded by EU.

The socio-constructive approaches conduct the processes to become somewhat unpredictable and challenging to manage (Jylhä-Vuorio, 2011). Students also have personal learning paths and learning curves, which means that the steering and tutoring need to be done accordingly. On the other hand the integrative methods enhance generating genuine collaborative learning, co-creation and innovation. As the design work has become distinctively human-based and integrative, and the design of education is becoming profoundly student-oriented, it has become elementary to keep processes in track and students in the aimed learning route by reflection and evaluating along the way. Self-reflection is an applicable tool in an open innovation environment for learners to conceptualize and evaluate the learning process, learning outcome and direction throughout the studies. It is also very important to have the partners and clients from the working life and industry to participate the evaluation. Teachers take a role as observant process managers, tutors and inspirers (Jylhä-Vuorio, 2011).

PlanC as a tool to transform operation towards open innovation space

While the Open Innovation Space (OIS) model is well described and is seen as executable, the actual change in organisational behaviour does not take place without effort. In Savonia University of Applied Sciences a project was implemented to support new strategy and bring Universiy closer to the theoretically driven OIS model. In essence the project can be seen as an attempt to foster incremental innovation in non-scince based sectors, with an emphasis on network benefits, as suggested by Forsman (2011). In order to examine whether the project succeeded (secondary goal in this paper) and to establish how does strong tie development between faculty and firm representatives differ in the context of applied science university from strong tie development in the context of a research university (primary goal in this paper) the following model and related hypotheses was set up (Figure 2).

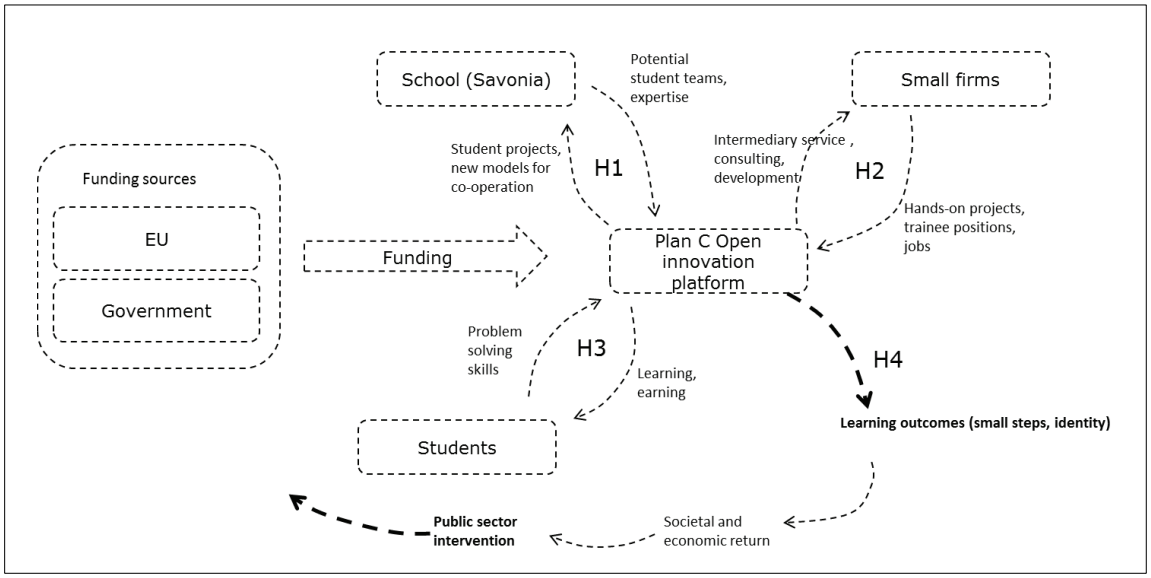

Figure 2 PlanC project as a project to implement Savonia's OIS model

First, in order for the development tool to have been succesful learning must have taken place within Savonia University of Applied Sciences. This may mean that the university's employees have learned new and better ways to co-operate, new mechanisms or procedures for firm university collaboration have been created or that school staff has established closer relationships to firms in the area, to name few possibilities. As such we hypothesize concerning the relationship between Savonia University of Applied Sciences and Plan C project that:

H1: Open innovation platform (Plan C) provides an experimental environment for Savonia University of Applied Sciences to enhance its development capability

Second, a necessary condition for the development tool to have been succesful is that new firms and entreprenerus have been attracted to co-operation and that these find co-operation valuable for their survival and further development. Increased university-firm co-operation may mean that new firms have been attracted to co-operation with university, that development projects have been carried out in firms, that entrepreneurs and their firms have learned through co-operation or that entrepreneurs are satisfied in co-operation. As such, it is suggested concerning the relationship between firms and Plan C project that:

H2: Open innovation platform (Plan C) is able to attract creative entrepreneurs, help them prioritise development activities and offer suitable student teams to foster firms' development

Third, in the interest of university is the progress of its students. Therefore it must be the case, that Plan C project has been recognised among student population and has attracted

students to be involved with firm collaboration offered by the project. As signs of improvements new students have been attracted to co-operation with firms, development projects have been carried out in firms by students, students have learned through co-operation and students are satisfied in co-operation. These thoughts guide our third hypothesis:

H3: Open innovation platform (Plan C) is able to attract potential student teams by offering them hands-on learning experiences and potential future earnings

Finally, Plan C project has been funded by the European Union and it was aimed at bringing the university closer to the theoretically proposed OIS model that builds on active firm-university collaboration. While in the initiation phase it is natural that extra resources are needed in overcoming costs that arise from developing novel practices, at best these new practices would be maintained in the future without extra intervention. Consequently, it might be that a new permanent model for co-operation would had been created, resources used in the project would had been in line with the results achieved in the project and the established new model works without further EU/government intervention. To shed light on these, fourth hypothesis is formulated as:

H4: Open innovation platform (Plan C) strengthens area by creating and strengthening personal ties between creative entrepreneurs and Savonia University of Applied Sciences that justify the EU/government intervention

3 Methods

Data

Data were collected from multiple quantitative and qualitative sources. First, in order to receive an understanding about the Plan C project in Savonia University of Appied Science, a feedback survey for project employees was sent out. In this survey it was inquired whether one had learned something new during the Plan C project, what new ideas, practices, etc. one will apply in future work, whether one has learned to know local businesses better during the project and whether one may benefit from these new contacts in the future. Second, a list of targeted firms in creative industries in the region was received from project administration. This list was used to estimate how largely potential firms (in creative industries) were approached and firms attracted to the project. Those firms that were participating the project are listed in table one. Third, a list of development projects in participating firms was constructed (see appendix). This serves as a basis for examining the content and the relevance of real development work done within the project. Fourth, a feedback survey for firms' representatives was carried out. This feedback survey included questions such as what goals were achieved in the project and which goals were not achieved, what contributed to achieving project goals and how does the future of the firm look like.

Table 1 List of firms and their operation areas

Firm	Found	Business
A	2003	Other education
B	2011	Architectural activities
C	2009	Fitness facilities
D	2005	Restaurants and mobile food service activities
E	2003	Activities of other membership organisations
F	1962	Cultural education
G	-	Recreational activity
H	-	Creative industries and arts
I	2012	Performing arts
J	2013	Specialised design activities
K	2000	Manufacture of other products of wood
L	-	Manufacture of food
M	2010	Activities of other membership organisations
N	2007	Translation and interpretation activities
O	1988	Other education
P	-	Wellbeing services
Q	2007	Manufacture of other wearing apparel and acc.
R	2012	Manufacture of other wearing apparel and acc.

4 Results

In the results section empirical data are examined in light of the research hypotheses. As presented in the method section, our empirical data sources include a feedback survey for project employees, a list of targeted firms in creative industries in the region, list of development projects in participating firms, a feedback survey for firms' representatives, and budget information. In the following discussion various pieces of evidence are presented in order to find out to what extent data give support to our hypotheses.

H1: Open innovation platform (Plan C) provides an experimental environment for Savonia University of Applied Sciences to enhance its development capability

Hypothesis one receives some support from the empirical data. Interview material from project participants reveals that participants have learned to know new methods of co-operation that may be utilized in the future. In addition, participants have learned to know the proximate firm population better than they knew before the project and these contacts may well be activated in the future. The importance of these findings is down played by the fact that only few teachers have dealt with the project. Hence, it questionable how widely this particular project has been able to influence the operation of Savonia University of Applied Sciences as a whole.

Interview/survey material hints that school staff has learned new and better ways to co-operate and also that prior thoughts concerning development work have been validated. Following quote by a development expert describes how 'AHJO' development tool has been helpful for prioritising development needs in the beginning of the development process:

> 'The 'AHJO' tool works fine in the development work with smaller firms and communities. It forces entrepreneurs to think, prioritize and report. For a consultant it serves as a guideline for seeing how and in what matters firm should make progress. Moreover, it serves as a development contract that makes visible project goals for each party.'

In the development work with firms locally developed 'AHJO' tool has been implemented. For some staff members and for most of the entrepreneurs this development tool has been a novel experience. For others this tool is familiar from previous experiences. Common for all project participants seem to have been that it has bounded development needs and development possibilities together in a practical way. Some staff members point out that this practicality is something that they have become even more aware during the project. Thus, away from theory, towards practical problem solving as illustrated through the following quote:

> 'Firms need very practical communication examples and practical action in carrying out development work. Even until now I have been practically oriented but during this project I have become even more convinced that this is the right way. Hence, not so much theory, but directly solving different problems right after the current state analysis has been carried out.'

While it seems clear that project staff has been able to learn something new during the project, the more difficult question is whether new mechanisms or procedures for firm-university collaboration have been created. This would require that new practices were independent of individuals that took part in the project and these practices would become legitimated ways of acting within the organisation in the future. One problem in project based (EU funded) development work is that if many project are being carried out within an organisation simultaneously, it results most likely in multitude of new proposals for new practices from each project. In this situation, the management has difficulties in finding out which new ways should be adopted.

Concerning the question of whether 'school staff has established closer relationships to firms in the area' it is possible to find some support. In the end the Plan C project was established to take Savonia University of Applied Sciences towards the OIS operation mode in which the emphasis is on project based collaboration with firms in the proximity of the University. Based on narrow comments from the project staff, it seems plausible that this is the case:

> 'I have learned to know better firms around the university. Before the project creative sector was familiar to me but now I have become even more familiar with entrepreneurs in this sector'
>
> 'I have gained in depth insight in firms in the region and at the same time I understand more deeply their current difficulties and future challenges. On the other hand also possibilities for future growth and internationalisation have been discussed.'
>
> 'I have learned to know firms in geographically larger region and broader range of industries than before. Regional economy's crisis i.e. industry shut-downs and concentration works places in Finland is seen as a problem. In this setting project as this gives some encouragement for setting local products and services visible.'

On the premise of the above empirical evidence hypotheses one receives support. Plan C project has been able to increase the development capability of the Savonia University of Applied Sciences. First, school staff has learned new and better ways to co-operate e.g. in form of applying practically oriented development tool 'AHJO'. Second, new mechanisms or/and procedures for university-firm collaboration have been created although the steps in this respect seem to be minor. Third, school staff has established closer relationships to firms in the area. While this has occurred in among the individual that participated Plan C project it possible that this information will be further applicable in the context of Applied Sciences University as a whole.

H2: Open innovation platform (Plan C) is able to attract creative entrepreneurs, help them prioritise development activities and offer suitable student teams to foster firms' development

Hypothesis two is largely supported by the empirical material. More than twenty small firms from creative industries were attracted to the project. In these firms a number of small scale development projects were carried out after carefully prioritising development

activities. Post-project surveys reveal that firms were mostly satisfied with progress that was achieved in firms as well as with co-operation with Savonia University of Applied Sciences in general.

The material of PlanC project administration reveals that new firms have been attracted to co-operation with Savonia. A considerable number (+100) of firms were approached during the project and from these a sufficient and targeted number of firms choose to take part in the project. In total there are (500-3000) firms in the proximate region in creative industries of which 25 firms is from 3% to 10%. While the number of firms attracted to co-operation is clearly sufficient, there may be some room for improvement in the marketing process. In the quote below a project staff member lays doubts on the use of certain procedure of the marketing process.

> 'In my opinion the Flow Café type of start does not favour this kind of project. Participants merely want to hear facts and examples of similar projects and concrete results achieved in them such as new business opportunities. Flow Café could be better utilized as a tool to facilitate networking among firms that have been with a project for some time where participants already have recognized their specific strengths and/or needs for support.'

Concerning firm development projects there is a list in appendix. It clearly shows that in each firm a number of projects have been carried out. These projects range from overall business model development to smaller more specific tasks such as drafting and issuing a press release. An interesting nuance within the project is that for each firm a video commercial was prepared that can be utilized in marketing. In summary the development work is in form that was expected by previous studies. It is practically oriented, small scale development where consults and university representatives need to speak the same language than entrepreneurs. Once learned and experienced in one project, it can be applied in future co-operation in future projects.

Firms' representatives' evaluations on project outcomes show on one hand that entrepreneurs and their firms have learned through co-operation and on the other hand that entrepreneurs are satisfied in co-operation.

Table 2 shows responses from 11 entrepreneurs (response rate 50%) concerning outcomes and management of the Plan C project. The overall evaluation is above three in a scale from one to four where four stands for greater satisfaction, suggesting that in general the project has been successful and entrepreneurs are satisfied with it. Concerning learning (item 6) the results suggest that something new, innovative or learning has been achieved (mean 3,00 and standard deviation 0,77). Moreover, it seems that learning has had an impact on the operation of firms in the future since the item 'results will have a positive impact on our operation after the project' averages at 3,30 with standard deviation of 0,67.

Table 2 Entrepreneurs' project evaluation (1. Fully Disagree….4. Fully Agree)

Item	Mean	Std dev	N
1. Results will have a positive impact on our operation after the project	3,30	0,67	10
2. Advisory board was effective in supporting the project Plan C	3,13	0,35	8
3. Plan C project was well organised	3,09	0,54	11
4. Plan C project advanced according to execution plan	3,00	0,63	11
5. Results are in line with the purpose that Plan C was established for	3,00	0,63	11
6. Project was successful in meeting various stakeholders' needs and expectations	3,00	0,67	10
7. Something new, innovative or learning was achieved	3,00	0,77	11
8. Project communication was successful	3,00	0,63	11
9. The goals of the Plan C were achieved	2,91	0,70	11
10. I personally participated in the project actively	2,73	0,79	11

H3: Open innovation platform (Plan C) is able to attract potential student teams by offering them hands-on learning experiences and potential future earnings

Hypothesis three does receive some support in our data. Relatively few students were attracted to carry out development projects in firms. Thus, only a few students were able to learn work life practices and create ties that possibly facilitate future earnings. A positive sign of student-firm collaboration is that participating students were satisfied with their projects (although there is no written evidence on this). This hints that in principle the co-operation works and thereby the challenge in future is to upscale this successful co-operation.

That new students have been attracted to co-operation with firms can be seen from project administration archives. As

Table 3 shows there have been approximately 200 students involved in projects with firms and they have earned 225 credits during their involvement. Students have taken part in versatile development projects that range from brochure design to marketing and sales related duties. Mostly the activity carried out by students has been narrow and short assignments which clearly is a shortcoming: only three students prepared candidate theses to project companies. Unsatisfactory is also the number of firms (=five) in which student activity has taken place.

Table 3 Student involvement in PlanC project

Student work outcomes	Results
Students involved	200
Credits achieved	225
Number of candidate thesis	3
Number of projects	8
Number of firms with student projects	5
Types of projects	Brochure design Web page design Visual design Marketing and sales Promotion campaign Prototype testing

H4: Open innovation platform (Plan C) strengthens area by creating and strengthening personal ties between creative entrepreneurs and Savonia University of Applied Sciences that justify the EU/government intervention

Empirical evidence for our hypotheses four is mixed. The previous discussion on hypotheses one to three hint that firm level co-operation has succeeded best. Also learning within the organisation has taken place and firms seem satisfied in the co-operation. However, in the area of student-firm - co-operation results are less satisfying. When this information is balanced against the resources and inputs used to carry out the Plan C project one may conclude that project has succeeded to justify the EU/government intervention.

The information in Table 4 below helps to understand the Plan C project in larger context. It relates the number of teachers, R&D employees and students involved in the project to the total number of actors in each category within Savonia's department of business administration and the number of involved firms and employees to total number of firms and employees in Creative industries in the region.

Looking first at Plan C project within Savonia's department of business administration it seems that the coverage of Plan C is sufficient and based on these numbers it is possible that project could have an impact on organisational practices. Every sixth teacher from the pool of sixty teachers and practically each R&D employee have been taking part in the project. Thus, if a new work practise or operational model were created within the project it is possible that it would become a part of the normal operation mode. From students every fourth should have become familiar with the project, thus also from students' point of view project has served as a learning platform and as such familiarized students with real-life practices. However, as pointed out, only few students have been deeply involved with the project.

For the proximate firm population in creative industries we have two estimates that are different due to different definitions on creative industry. One is from the Ministry of Employment and the Economy's report on creative industries (Metsä-Tokila, 2013) and the other is University of Eastern Finland's report on creative industries in Pohjois-Savo (Eskelinen et. al., 2010). By comparing the number of firms in Plan C project to the

number of firms in the proximate environment we can see that firms were approached sufficiently from the project. Approximately every fifth firm in creative industries were approached (by telephone) in the project meaning that those contacts have been informed about the possibility of university-firm collaboration. From these, as targeted, about twenty-five firms were attracted to the project. These firms employed around 50 people, which is between 10 percent and 3 percent of the total employees in creative industries in Pohjois-Savo (depending on the estimate). Thus, as such it seems that project has reached the proximate firm population in sufficient way.

Table 4 Volymes in Plan C project

Teachers	**Teachers in Savonia (in business administration)**	**60**
	->Teachers involved in Plan C project	10
R&D employees	**R&D employees in Savonia (in business administration)**	**9**
	->R&D employees involved in Plan C project	12
Students	**Students in Savonia (in business administration)**	**830**
	->Students involved in Plan C	200
Firms	**Firms in Creative industries in Pohjois-Savo**	**~ 270[1] - 750[2]**
	->Firms that were approached in Plan C	~ 100
	->Firms involved in Plan C	~ 25
Firm employees	**Employees in Creative Industries in Pohjois-Savo**	**~ 560[3] - 3000[4]**
	->Employees involved in Plan C	~ 50

Finally, it seems that resources of the project are in line with the results achieved. In total k800€ of public funding has been used for the project. With this investment a targeted number of firms were attracted to take part in the project and their development was enhanced. Simultaneously, the employees of Savonia University of Applied Sciences were able to learn new practices to support the novel project based learning strategy. Although it seems that project has been successful to some extent, it is likely that the established new model does not work without further EU/government intervention. Simply, the duties of staff do not currently cover the execution university-firm collaboration. Thus, a specific project, such as Plan C, is only effective way to foster university business collaboration.

[1] Metsä-Tokila, T. 2013

[2] Eskelinen, R., Jussila, A., Kinnunen, O., Koskinen, M., Sares, I., Voutilainen, P., Wulff, S. & Kosunen. P. 2010.

[3] Metsä-Tokila, T. 2013

[4] Eskelinen, R., Jussila, A., Kinnunen, O., Koskinen, M., Sares, I., Voutilainen, P., Wulff, S. & Kosunen. P. 2010.

5 Discussion and conclusions

In this paper two research questions were studied. The primary question was how does strong tie development between faculty and firm representatives differ in the context of applied science university from strong tie development in the context of research university. A secondary and more practical question concerned the extent to which the Plan C project was successful in bringing Savonia University of Applied Sciences closer to theoretically derived Open Innovation System (OIS) operation model. Our analysis was framed around four hypotheses concerning each stakeholder's (Savonia, Firms, Students, Government) relationship with the innovation platform. By studying these hypotheses the aim was to provide the insight needed to answer the above mentioned questions.

Overall, our analysis shows that the Plan C project has its merits. Concerning the latter question the results of our analysis show that the creation of an open innovation platform (Plan C) has helped the Savonia University of Applied Sciences to increase the number of ties between university staff and firm representatives as well as the tie strength. By so doing the project has supported the theoretically driven Open Innovation System operation mode. While learning has broadly taken place it is, however, unclear to what extent current achievements are turned into novel practices in everyday operation of Savonia. Intense university-firm collaboration in form of joint development projects is highly dependent on individual efforts of the university personnel. Thus, as long as the governance of an Applied Sciences University is based on more traditional view on University's operation model, this new resource consuming model is not likely to work. Under these circumstances the only possibility to experiment with the new model is through EU or other externally funded supported initiatives.

Concerning former and a more theoretical question our analysis suggests that strong tie development between faculty and firm representatives in the context of applied science university differs from strong tie development in the context of research university. The foundational difference seems to emanate from the missing common history between small firm population (creative entrepreneurs) and the staff of applied science university. In the context of research university firm representatives and university personnel learn to communicate through common language through studies and research during the educational and occupational career. However, in the context of applied sciences university between creative entrepreneurs and applied science university staff this does not happen. Creative entrepreneurs are specialists in their often art related areas and not so much specialists in business areas such commercialization, sales or business development, that are in the core of applied science university's business department. Consequently, in the context of research university reciprocal relationships between the two parties develop in time whereas in the context of applied science university the relationship between creative entrepreneurs and staff needs first to be created. As our empirical material shows, the best way to convince entrepreneurs to co-operation from the side of applied science university is to approach firms through hands-on models. In these models business development specialists meet creative entrepreneurs with concrete development tools that easily fit the mental models of creative entrepreneurs. At best, those that are involved in the co-operation also have some industry experience. As shown by the Plan C project, this helps in creating the trust.

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Appendix

	List of development projects by firm
A	Business plan, business model canvas, value proposition, developing of the training model towards service concept
B	Business plan & financing plan, time schedule, communications training a plant nursery in internet, new brochure and image, student thesis title on marketing
C	Cash-flow analysis of services/products, sales competition, internal sales competition between staff, www pages, communications consulting, annual planning, planning crisis communication
D	Product cards/texts, annual communication plan, training on interaction and customer service, Ahjo – tool, new brochure, branding
E	Training on communication, product cards/texts, service concept development, safety plan, yearly plan, marketing plan, budgeting, total quality management TQM (evaluation), new brochure, product cards
F	Developing pilot projects of the cultural services to be the service products, new brochures, update of www pages
H	Communications training, consultation on how to write a business offers and bulletins, productisation training, work shops, new logo to Warkauden Ruukki, branding, thesis title: marketing analysis of the use of hand made ceramic caske
I	Business plan, to conceptualisation of a new product, communication development, new brochure, fresh image
J	Cost analysis, cash flow, inventory accounting, resource evaluation, internationalisation capability, finding sales agents, communication- marketing-sales, developing business gift products, communications training, www - pages, plan of marketing communication, blog, www -pages checking, web shop yes or no?, logo, planning of exhibition department
L	Business plan, social media
M	Co-operation development, product and concept development, brochure, www – pages
N	Updating brochure, training of sales calls, consulting on how to write marketing letters, pricelist, training of sales skills, cash flow, development of new services, mapping of potential customers, brochure, www –pages
O	Marketing and sales skills training, communication training: media communication, www-pages, event marketing , training of how to write an offer (business letter), cash flow, event planning, training new service products, fresh image, new brochure
P	Updating of business plan, to developing business mind-set, marketing plan, training of how to write business letters, www-pages, updating CV, communications training, sales technics, cash flow, price lists, pricing
Q	Business plan, communications training, www-pages, training of how to write offers, annual communication plan, training of conceptualisation and products, branding, brochure, www – pages, thesis title: Marketing analysis of Vaeltajan Eräreppu
R	Developing business idea, training of sales skills, www pages, marketing communication, Design/sales events, optimisation of inventory
S	Updating brochure, new gallery, cash flow, developing business: new products, management and leadership development, annual planning, new logo, business gifts, development of shop design, www -pages, brochure

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